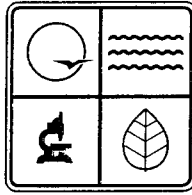


STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI AIR CONSERVATION COMMISSION

PERMIT BOOK



PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **052006-019**

Project Number: 2006-02-086

Owner: Jefferson City Landfill, LLC

Owner's Address: 722 Dix Road, Jefferson City, MO 65109

Installation Name: Jefferson City Landfill

Installation Address: 5605 Moreau River Access Road, Jefferson City, MO 65102

Location Information: Cole County, S23, T44N, R11W

Application for Authority to Construct was made for:

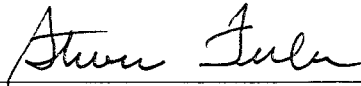
Installation of a landfill gas collection system to be vented to a 2,000 standard cubic feet per minute (SCFM) open flare. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

☒ Standard Conditions (on reverse) are applicable to this permit.

☐ Standard Conditions (on reverse) and Special Conditions (listed as attachments starting on page 2) are applicable to this permit.

MAY 26 2006

EFFECTIVE DATE



DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional Office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed Special Conditions as provided in RSMo 643.075. If you choose to appeal, the Air Pollution Control Program must receive your written declaration within 30 days of receipt of this permit.

If you choose not to appeal, this certificate, the project review, your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Department of Natural Resources has established the Outreach and Assistance Center to help in completing future applications or fielding complaints about the permitting process. You are invited to contact them at 1-800-361-4827 or (573) 526-6627, or in writing addressed to Outreach and Assistance Center, P.O. Box 176, Jefferson City, MO 65102-0176.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention Construction Permit Unit.

2006-02-086

Jefferson City Landfill, LLC

722 Dix Road, Jefferson City, MO 65109

Jefferson City Landfill

5605 Moreau River Access Road, Jefferson City, MO 65102

Cole County, S23, T44N, R11W

Installation of a landfill gas collection system to be vented to a 2,000 standard cubic feet per minute (SCFM) open flare. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2006-02-086
Installation ID Number: 051-0058
Permit Number:

Jefferson City Landfill
5605 Moreau River Access Road
Jefferson City, MO 65102

Complete: February 23, 2005
Reviewed: April 13, 2005

Parent Company:
Jefferson City Landfill, LLC
722 Dix Road
Jefferson City, MO 65109

Cole County, S21, T26N, R7E

REVIEW SUMMARY

- Jefferson City Landfill, LLC has applied for authority to construct a landfill gas collection system to be vented to a 2,000 standard cubic feet per minute (SCFM) open flare.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment.
- Subpart WWW of the New Source Performance Standards (NSPS), *Standards of Performance for Municipal Solid Waste Landfills*, applies to the landfill. Subpart A, Section 60.18, *General Control Device Requirements*, applies to the flare.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart AAAA, *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills*, applies to the installation.
- The gas collection system and flare are being installed to control landfill gas emissions.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of carbon monoxide (CO) are above de minimis levels but less than major source levels.
- This installation is located in Cole County, an attainment area for all criteria air pollutants.
- This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].

- Ambient air quality modeling was performed to determine the ambient impact of CO.
- Emissions testing is required as outlined in NSPS, Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills*.
- Revision to your Part 70 Operating Permit application is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended without special conditions.

INSTALLATION DESCRIPTION

Allied Waste Services operates the Jefferson City Landfill, LLC, an existing Municipal Solid Waste (MSW) landfill (ID number 051-0058) located in Jefferson City, Missouri (Cole County). On February 16, 1999, the Air Pollution Control Program issued a permit for the initial proposed design of 4.55 million Megagrams. This permit was later amended to account for a horizontal expansion. The facility subsequently became a major installation for operating emissions (i.e., greater than 2.5 million megagram (Mg) capacity), under Title V, Part 70. A major source operating permit was issued in January of 2005 (permit number OP2005-002).

In addition to submitting a Part 70 operating permit application, the facility performed analytical testing for the gas collection system pursuant to NSPS, Subpart WWW. Jefferson City Landfill performed non-methane organic compound (NMOC) projected emissions. Results revealed that the facility exceeded the NMOC emission rate of 50 Mg per year; as such a gas collection system was required. The landfill currently operates a gas collection and control system consisting of 40 gas extraction wells and associated header piping routed to a 2000 scfm open flare for destruction at the original 41 acre landfill.

PROJECT DESCRIPTION

MSW is received at the facility and placed in the active cell(s) where it is compacted and covered on a daily basis. The MSW undergoes anaerobic decomposition releasing saturated landfill gas (LFG) that primarily consists of carbon dioxide (CO₂) and methane (CH₄) in an approximately equal volume basis. In addition to these two components, water vapor and trace amounts of non-methane organic compounds (NMOCs) are also released.

In an effort to control LFG, minimize odor, and comply with NSPS, Subpart WWW, Jefferson City Landfill, LLC proposes to construct and install a gas collection system and open flare in the horizontal expansion area. Gas conveyed to the central management point by the blower will be routed to an open LFG flare for destruction by combustion. The flare manufactured by the John Zink Company, LLC is a ZEF model, elevated, open landfill flare designed for a destruction and removal efficiency of 98%. The system has a maximum hourly design rate (MHDR) of 54.64 million British thermal units per hour (MMBtu/hr) at a maximum flow rate of 2,000 SCFM.

EMISSIONS/CONTROLS EVALUATION

The type and amount of air pollutants emitted from landfills vary over the life of the landfill depending on the composition of the waste, the landfill design and management, the current anaerobic state of the waste and the length of time the waste has been in place in the landfill. Air emissions are caused by the decomposition of the waste, due to the action of microorganisms on the MSW material. The primary constituents of LFG are CH₄ and CO₂, which are not currently considered regulated air pollutants. In addition to the CH₄ and CO₂ emissions, some NMOCs will also be emitted. The NMOC often contains various HAPs and volatile organic compounds (VOCs). The amount of HAP/VOC emissions will vary over the life and closure activities of the landfill.

Potential emissions from the flare were calculated based upon the designed maximum flow rate of the flare. As stated previously, the LFG stream fed to the flare consists of 50% methane and 50% carbon dioxide. A capture efficiency of 75% was assumed for the gas collection system and a control efficiency of 98% was assumed for NMOC, VOC and volatile HAPs. It was determined that a methane emission rate of 19 million cubic meters per year would correspond to an LFG flow rate of 2,000 SCFM through the flare, the maximum flow rate that the flare is capable of handling. Based on the emission rate of methane, emissions of nitrogen oxide (NO), CO, and particulate matter less than 10 microns (PM₁₀), which are combustion byproducts from the flare, were calculated using emission factors obtained from EPA document AP-42, *Compilation of Air Pollutant Emissions Factors*, Fifth Edition, Section 2.4, *Municipal Solid Waste Landfills* (11/98).

Landfill emissions were estimated using the Environmental Protection Agency's (EPA) Landfill Air Emissions Estimation Model (LANDGEM), as well. The average annual amount of waste accepted by the landfill from 1979 to 2005 was entered into the model. The values used in the model for the methane generation potential (L₀) and methane generation rate constant (k) were the AP-42 recommended values of 100.0 cubic meters per Mg and 0.04 per year, respectively. The AP-42 recommended values were used instead of the those presented in the NSPS Subpart WWW since the purposes of these calculations are to estimate the most realistic potential emissions of the landfill and are not for showing compliance with the NSPS. The value for the NMOC concentration used in the model was 600 parts per million by volume. Based upon the above parameters, it was determined that the peak methane emissions would be approximately 7 million cubic meters per year, well below the capacity of the flare.

Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). Existing potential emissions of PM₁₀, VOC, CO, HAPs and NMOC from Jefferson City Landfill, LLC are assumed to be below major levels. Existing actual emissions were taken from the applicant's 2005 Emissions Inventory Questionnaire (EIQ) submittal. The following table provides an emissions summary for this project.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2005 EIQ)	Potential Emissions of the Application
PM ₁₀	15.0	N/D	2.05	4.5
SO _x	40.0	N/D	1.14	3.7
NO _x	40.0	N/D	3.27	10.5
VOC	40.0	N/D	2.13	0.00
CO	100.0	N/D	61.25	197.1
HAPs	10.0/25.0	N/D	0.83	0.00

N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of CO are above de minimis levels but less than major source levels.

APPLICABLE REQUIREMENTS

Jefferson City Landfill, LLC shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170.
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations, 10 CSR 10-6.070 – New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills, 40 CFR Part 60, Subpart WWW*
- *New Source Performance Regulations, 10 CSR 10-6.070 –General Provisions, 40 CFR Part 60, Subpart A, Section 60.18, General Control Device Requirements*
- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, 40 CFR Part 63, Subpart AAAA*

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed utilizing the Screen 3 model to determine the ambient impact of CO. The ambient impact is for a 2,000 SCFM flare having a stack height of 30 feet and total heat release of 3.8 calories per second. An emission rate for CO of 45 pounds per hour was used in the model. As stated previously in the permit, the CO emission rate is based upon the methane generation rate expected from the landfill at maximum flow through the flare. As can be seen in Table 2, the results of the model predict an ambient impact well below the National Ambient Air Quality Standards (NAAQS).

Table 2: Screen3 Results for CO

Pollutant	Modeled Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	Time Period
CO	16.87	10,000	8-hour
	24.1	40,000	1-hour

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted without special conditions.

Timothy Hines
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated February 23, 2006, received February 23, 2006, designating Allied Waste, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Southeast Regional Office Site Survey dated March 17, 2006.

Mr. Brad Zimmerman
Environmental Manager
Jefferson City Landfill, LLC
722 Dix Road
Jefferson City, MO 65109

RE: New Source Review Permit - Project Number: 2006-02-086

Dear Mr. Zimmerman:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your revised operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact me at (573) 751-4817, or you may write to me at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102. Thank you.

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:thm

Enclosures

c: Northeast Regional Office
PAMS File 2006-02-086
Permit Number: